

REMARKS

Claims 1 and 4 through 19 are in the application, with Claims 1, 8, 12, 13, 17 and 19 having been amended and with Claims 2 and 3 having been cancelled by this paper. Claims 1, 12, 13, 17 and 19 are independent. Support for all amendments can be found in the specification as originally filed. No new matter is believed to be added by this amendment. Applicants respectfully request reconsideration and further examination of the pending claims in view of the arguments presented herein and in accordance with 37 CFR §1.112.

Specification

The specification has been amended to provide filing data for the co-pending patent applications mentioned therein. Withdrawal of the corresponding requirement is therefore respectfully requested.

Rejection Under 35 U.S.C. § 102

Claims 1 through 19 are rejected under 35 U.S.C. 102(e) as allegedly anticipated by U.S. Patent No. 6,449,335 (“Siochi”). Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1 and 17

Amended independent Claim 1 relates to a method for delivering treatment fields. The method may include identification of a sequence group that includes instructions defining a plurality of fields, where at least one of the plurality of fields is a photon field and at least one of the plurality of fields is an electron field. A method according to Claim 1 may also include determination of a type of radiation to be applied in a first field of the sequence group, where the type of radiation is selected from primary photon radiation and primary electron radiation, configuration of a radiation therapy treatment device to deliver the first field based at least in part on the type of radiation, and delivery of the first field. In some embodiments, a system according to Claim 1 may selectively deliver a photon field or an electron field. Such an arrangement may provide more flexible and efficient radiation treatment than previously available.

Siochi is not seen to disclose the foregoing features of Claim 1, particularly with respect to identification of a sequence group that includes instructions defining a plurality of fields, where at least one of the plurality of fields is a photon field and at least one of the plurality of fields is an electron field, and determination of a type of radiation to be applied in a first field of the sequence group, where the type of radiation is selected from primary photon radiation and primary electron radiation.

In particular, Siochi is seen to describe a system to determine a sequence in which radiation should be delivered to various treatment fields. The treatment fields may be located at different positions (ports) and may be differently-shaped such that a collimator might be placed in a first leaf configuration at one port and a second leaf configuration at another port. The determination may attempt to minimize total treatment time or to minimize an extent of collimator leaf travel.

As indicated in the Office Action, Siochi notes that electron or photon radiation may be used for therapy. Siochi also provides alternatives for elements 66 and 72 depending on whether electron or photon radiation is used. However, Siochi does not disclose the delivery of treatment fields of different radiation types to different ports during a treatment sequence. Rather, Siochi describes a system in which a single radiation type (e.g. electron, photon) is fixed throughout operation based on the particular treatment device 20 that is used. The system of Siochi is therefore incapable of delivering a photon field and an electron field of a same sequence group.

Accordingly, Siochi cannot be seen to disclose the identification of a sequence group that includes instructions defining a plurality of fields, where at least one of the plurality of fields is a photon field and at least one of the plurality of fields is an electron field, and determination of a type of radiation to be applied in a first field of the sequence group, where the type of radiation is selected from primary photon radiation and primary electron radiation.

Amended independent Claim 1 is therefore believed to be allowable. Amended independent Claim 17 relates to an apparatus roughly corresponding to the method of Claim 1. Therefore, Claim 17 is believed to be allowable for at least the foregoing reasons presented with respect to Claim 1.

Claim 12

Amended independent Claim 12 relates to a method for automating the delivery of a plurality of treatment fields. The method includes identification of a sequence group defining a plurality of treatment fields, at least one of the plurality of treatment fields including a photon field and at least one of the plurality of treatment fields comprising an electron field. The method further includes determination of a type of radiation to be applied in a first of the treatment fields, where the type of radiation is selected from primary photon radiation and primary electron radiation, configuration of a radiation therapy treatment device to deliver the first treatment field based at least in part on the type of radiation, delivery of the first treatment field, and repeating the determination, configuration and delivery until each of the plurality of treatment fields of the sequence group have been delivered.

Siochi is not seen to disclose identification of a sequence group defining a plurality of treatment fields, at least one of the plurality of treatment fields including a photon field and at least one of the plurality of treatment fields comprising an electron field, and determination of a type of radiation to be applied in a first of the treatment fields, where the type of radiation is selected from primary photon radiation and primary electron radiation.

As mentioned above, Siochi describes the use of a system capable of delivering photon fields or electron fields, but not both. Since Siochi is not capable of delivering both types of fields, Siochi cannot be seen to disclose the identification of a sequence group defining a plurality of treatment fields including a photon field and an electron field, or determination of a type of radiation to be applied selected from primary photon radiation and primary electron radiation. Amended independent Claim 12 is therefore believed to be allowable.

Claim 13

Amended independent Claim 13 concerns a radiation therapy device that includes a beam source, selectively operated to generate a beam having a beam type selected from a primary photon beam and a primary electron beam, a beam shaping device, selectively operated to shape the beam, and a control system coupled to the beam source and the beam shaping device. The control system is operable to identify a treatment sequence group having a plurality of fields, where at least one of the plurality of treatment fields is a photon field and at least one of the

plurality of treatment fields is an electron field, identify a required beam type of each of the plurality of fields, and operate the beam shaping device to shape the beam to deliver each of the plurality of fields.

Siochi does not disclose a beam source selectively operated to generate a beam having a beam type selected from a primary photon beam and a primary electron beam. Again, Siochi only describes alternative configurations to deliver photon radiation exclusively or electron radiation exclusively. Moreover, nowhere does Siochi mention a control system to identify a treatment sequence group having a plurality of fields, where at least one of the plurality of treatment fields is a photon field and at least one of the plurality of treatment fields is an electron field. Claim 13 is therefore in condition for allowance.

Claim 19

Amended independent Claim 19 relates to a method for testing delivery of radiation fields including identification of a sequence group to be tested, where the sequence group includes instructions defining a plurality of fields, at least one of the plurality of fields is a photon field, and at least one of the plurality of fields is an electron field. The method further includes identifying an instruction of the sequence group, the instruction defining at least a type of radiation to be applied and a configuration of components of a radiation therapy device, preventing a beam source of the radiation therapy device from generating the radiation, configuring components of the radiation therapy device as defined by the instruction, and repeating the identifying an instruction, preventing, and configuring for each instruction of the sequence group.

Siochi does not describe any sequence group that includes instructions defining a plurality of fields of more than one radiation type. Accordingly, Siochi does not disclose identification of such a sequence group, or identification of any instructions defining at least a type of radiation to be applied and a configuration of components of a radiation therapy device. Claim 19 is therefore believed to be in-condition for allowance.

CONCLUSION

In view of the above, Applicants respectfully request withdrawal of the outstanding rejection and allowance of the present application. Applicants also request that any subsequent Office Action includes reasons and references supporting the rejection of each rejected claim as required by MPEP §707, 37 C.F.R. §1.104, and 35 U.S.C. §132. Applicants' silence with respect to statements made in the Office Action but not addressed herein does not imply agreement with those statements. If the Examiner has any suggestions for expediting allowance of the present application, the Examiner is kindly invited to contact the undersigned.

Respectfully submitted,

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